

---

**United States Department of Energy**

**Savannah River Site**



**Explanation of Significant Difference to the  
Revision 1 Record of Decision for the  
M Area Operable Unit (MAOU) (U)**

**CERCLIS Number: 92**

**SRNS-RP-2009-00406**

**Revision 1**

**May 2009**

**Prepared by:  
Savannah River Nuclear Solutions, LLC  
Savannah River Site  
Aiken, SC 29808**

---

**Prepared for U.S. Department of Energy under Contract No. DE-AC09-08SR22470**



**10450197**

**DISCLAIMER**

**This document was prepared in conjunction with work accomplished under Contract No. DE-AC09-08SR22470 with the U.S. Department of Energy.**

**This work was prepared under an agreement with and funded by the U.S. Government. Neither the U.S. Government or its employees, nor any of its contractors, subcontractors or their employees, makes any express or implied: 1. warranty or assumes any legal liability for the accuracy, completeness, or for the use or results of such use of any information, product, or process disclosed; or 2. representation that such use or results or such use would not infringe privately owned rights; or 3. endorsement or recommendation of any specifically identified commercial product, process, or service. Any views and opinions of authors expressed in this work do not necessarily state or reflect those of the United States Government, or its contractors, or subcontractors.**

**Printed in the United States of America  
Prepared for  
U. S. Department of Energy  
and  
Savannah River Nuclear Solutions, LLC  
Aiken, South Carolina**

## Introduction

This Explanation of Significant Difference (ESD) is being issued by the United States (U.S.) Department of Energy (USDOE), the lead agency for the Savannah River Site (SRS) remedial activities, with concurrence by the U.S. Environmental Protection Agency (USEPA) – Region 4 and the South Carolina Department of Health and Environmental Control (SCDHEC). The purpose of this ESD is to announce an expansion of the passive soil vapor extraction (PSVE) portion of the remedy selected in the *Record of Decision Remedial Alternatives Selection for the M Area Operable Unit (MAOU) (U)* (WSRC 2008), which was issued on February 5, 2009.

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117(c), SRS is required to publish an ESD whenever there is a significant change to a component of a remedy specified in a record of decision (ROD). Sections 300.435(c)(2)(i) and 300.825(a)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require the lead agency to provide an explanation of the difference and to make this information

available to the public in the Administrative Record File and information repositories.

The ESD is part of the Administrative Record File and is available for public review during normal business hours at the following information repositories.

U.S. Department of Energy  
Public Reading Room  
Gregg-Graniteville Library  
University of South Carolina – Aiken  
171 University Parkway  
Aiken, South Carolina 29801  
(803) 641-3465

Thomas Cooper Library  
Government Documents Department  
University of South Carolina  
Columbia, South Carolina 29208  
(803) 777-4866

## Site History, Contamination Problems, and Selected Remedy

This ESD documents a change to the volume of material to be treated via the remedy (i.e., PSVE) selected for the Production Area in the M Area Operable Unit (MAOU) ROD. Therefore, the discussion of the site history, contamination, and selected remedy in this ESD will focus on the MAOU Production Area. Additional information on all MAOU subunits can be found in the MAOU ROD (WSRC 2008).

The MAOU is located in the northwest portion of SRS and covers approximately 86 acres (Figure 1). Beginning in 1952, SRS produced special nuclear materials for the U.S. Department of Defense. An important step in the production cycle was the manufacture of fuel and target assemblies in M Area for the nuclear reactors. The MAOU Production Area consisted of three major production buildings (313-M, 320-M, and 321-M) that began operation in the early 1950s and continued operation at various production levels until the early 1990s.

The major Production Area facilities were used in the following capacities:

- Building 313-M – Used for the production of uranium slugs for reactor target assemblies
- Building 320-M – Used to produce the lithium-aluminum tubes for the target assemblies
- Building 321-M – Used for the production of reactor fuel assemblies

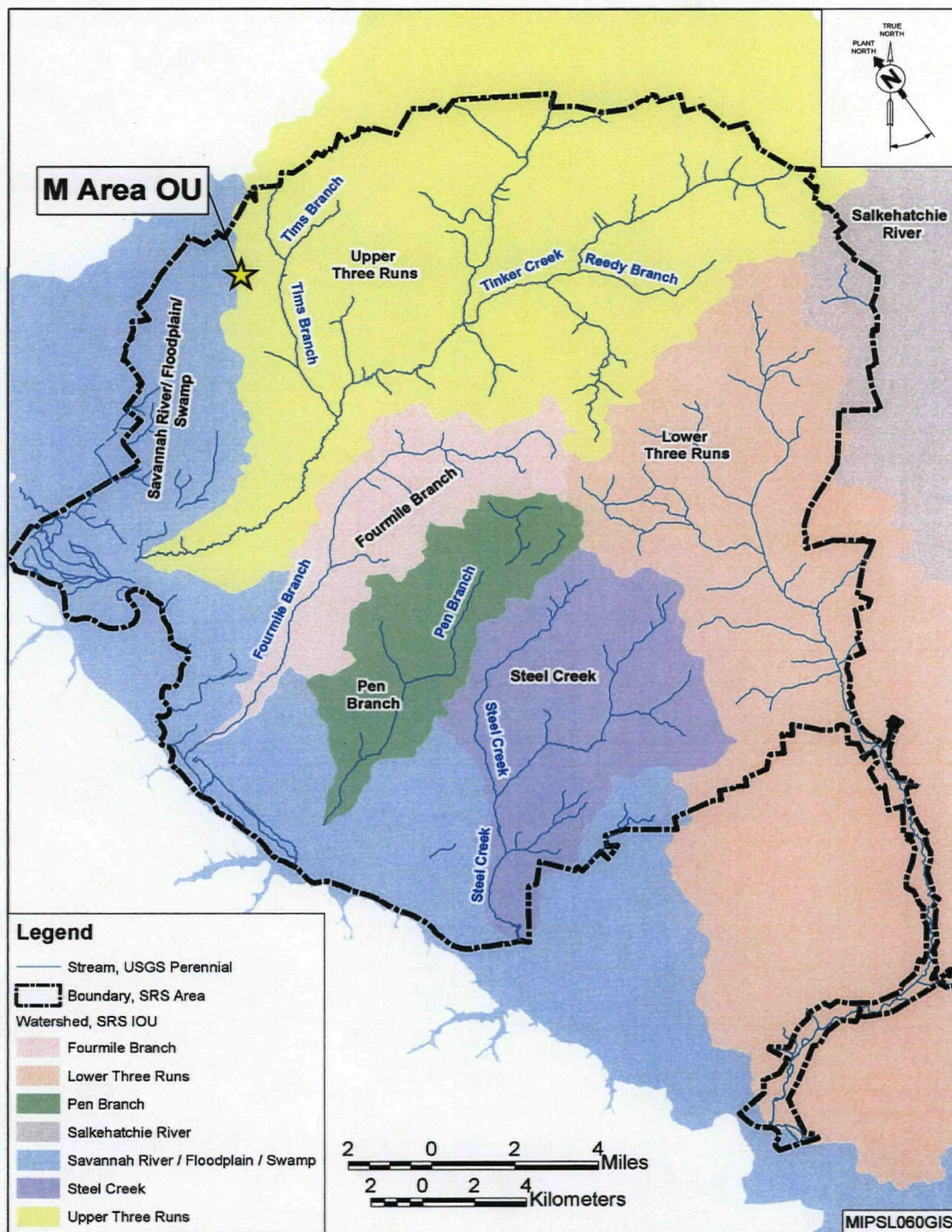
The manufacturing processes in M Area consumed a large quantity of industrial cleaning solvents and water, and early practices were to discharge the spent solvents and water directly into the environment. The major production

facilities used industrial cleaning processes and products (trichloroethylene [TCE], tetrachloroethylene [PCE], and trichloroethane) that were discarded to the M-Area Settling Basin via process sewer lines.

Early removal actions performed at the MAOU addressed significant volatile organic compound (VOC) sources (>50 mg/kg). For the Production Area final action, only TCE and PCE in soil remain as contaminant migration constituents of concern. Additionally, residual PCE remains below 321-M in deep soils (> 10 ft below ground surface) as principal threat source material. The remedy selected in the MAOU ROD consists of PSVE with institutional controls (ICs).

#### **Basis for the Explanation of Significant Difference**

The purpose of this ESD is to document a post-ROD change to the volume of material to be treated with the PSVE remedy selected for the MAOU.



**Figure 1. Location of the MAOU within the Savannah River Site**



During the MAOU Production Area early removal action, approximately 3,250 yd<sup>3</sup> of VOC-contaminated soil and concrete rubble was packaged into 383 lift-liners for planned off-site disposal. This material was excavated as a result of early removal actions targeting greater than 50 mg/kg concentrations of TCE and PCE. In September 2008, ten of the lift liners were sampled and analyzed to ensure off-site shipment criteria were not exceeded. The results indicated that VOC concentrations are much lower than 50 mg/kg. On December 2, 2008, a revised Action Memorandum was submitted to the USEPA and SCDHEC to discuss the use of additional time to evaluate more cost-effective on-unit treatment options for the bagged material. Based on this evaluation, SRS proposed on-unit PSVE treatment to the Core Team. In February 2009, the Core Team provided conditional approval of PSVE treatment of the bagged material provided additional sampling and analysis was conducted to bring the sample population up to 10% (i.e., an additional 28 lift-liners were sampled). Like the 321-M stockpiled soils and results from the first ten lift-liners, the PCE and TCE concentrations were found to be much lower than 50

mg/kg. The evaluation and sample results led to the selection of PSVE as the treatment method for the additional 3,250 yd<sup>3</sup> of contaminated material and this change to the ROD. PSVE was evaluated and selected as a proven cost-effective technology accepted by the public and environmental community. PSVE of this material in a new treatment cell offers significant cost savings over the off-site treatment and disposal option, while achieving the remedial goals of protection of human health and the environment and reducing the potential for impact to the groundwater.

#### **Description of Significant Differences**

The original selected remedy as identified in the ROD (WSRC 2008) entailed PSVE of approximately 1,100 yd<sup>3</sup> of stored soil in a treatment cell adjacent to the 321-M slab. The significant difference of the modified remedy from the original remedy is that one additional treatment cell (PSVE Cell) will be constructed to treat approximately 3,250 yd<sup>3</sup> of VOC-contaminated soil and concrete rubble with PSVE at the MAOU (Figure 2). This alternative would simply represent an expansion of the selected remedy in the MAOU ROD, within the area of contamination (AOC). Perforated PVC

pipings and BaroBall™ SVE wells will be included in the treatment cell and an infiltration control barrier made of flexible membrane liner (FML) will be placed over the soils/concrete media and sealed at the BaroBall™ wells. One foot of clean seeded common fill will be placed over the FML.

As the PSVE Cell resides within the MAOU land use control (LUC) boundary, institutional controls will be implemented to restrict land use and to control site access. Post-construction monitoring will be implemented to determine the effectiveness of the remedial action. The most restrictive RGs, which are 1.8 mg/kg for PCE and 15 mg/kg for TCE, will be utilized for the additional treatment cell. The additional PSVE treatment cell with ICs will result in an additional cost of approximately \$1.9 M to the total MAOU final action cost of \$2.4 M. Figure 3 shows the post-ROD Implementation Schedule.

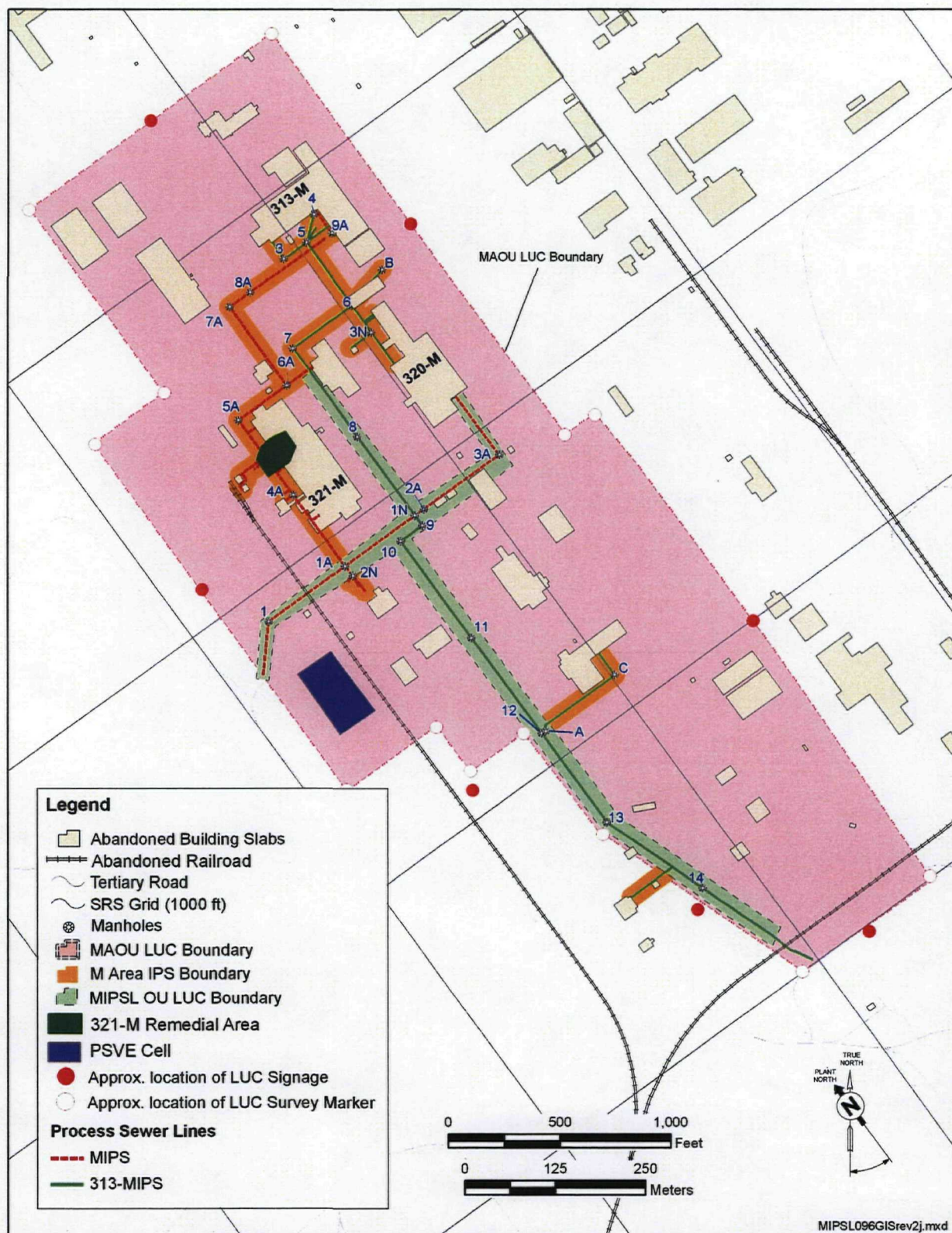
### Support Agency Comments

Comments from USEPA and SCDHEC will be incorporated in the ESD upon receipt.

### Statutory Determinations

The modified remedy meets the requirements of CERCLA Section 121 to (1) be protective of human health and environment; (2) comply with applicable or relevant and appropriate requirements; (3) be cost-effective; (4) utilize permanent solutions to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element.

Since hazardous substances, pollutants, or contaminants remain in the waste unit, ICs will be maintained to prevent unrestricted use of the area. Section 300.430(f)(4)(ii) of the NCP requires that a five-year remedy review be performed if hazardous substances, pollutants, or contaminants remain in the waste unit. The three Parties have determined that a five-year remedy review of the selected remedy (i.e., PSVE with ICs) effectiveness will be performed to ensure continued protection of human health and the environment. The issuance of this ESD satisfies NCP 300.435(c)(2)(i).



**Figure 2. Location of the Additional PSVE Treatment Cell at the MAOU**



### Public Participation Activities

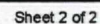
The public will be informed of the changes to the selected remedy as specified in this ESD through the *SRS Environmental Bulletin*, a newsletter sent to approximately 3,500 citizens in South Carolina and Georgia, and through the *Aiken Standard*, the *Allendale Citizen Leader*, the *Barnwell People Sentinel*, *The State*, and the *Augusta Chronicle* newspapers.

To obtain more information concerning this ESD, contact:

Paul Sauerborn  
Savannah River Nuclear Solutions, LLC  
Public Involvement  
Savannah River Site  
Building 730-1B  
Aiken, South Carolina 29808  
803-952-6658  
[paul.sauerborn@srs.gov](mailto:paul.sauerborn@srs.gov)







1756 RPD.doc

## REFERENCES

WSRC, 2008. *Record of Decision Remedial Alternative Selection for the M Area Operable Unit (MAOU) (U)*, WSRC-RP-2008-4030, Revision 1, Washington Savannah River Company LLC, Savannah River Site, Aiken, SC

SRNS, 2009. *M Area Operable Unit (MAOU) Sample Results of Materials Generated from the Early Removal Action Contained in 383 Lift-Liners (U)*, SRNS-RP-2009-00478, Revision 1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC



6.5.09

Date

*Helen Belencan*

Helen Belencan  
Deputy Assistant Manager for Closure Project  
U. S. Department of Energy  
Savannah River Operations Office

6-24-09

Date

*Franklin E. Hill*

Franklin E. Hill  
Director  
Superfund Division  
U. S. Environmental Protection Agency - Region 4

6/26/09

Date

*Daphne G. Neel*

Daphne G. Neel  
Bureau Chief  
Bureau of Land and Waste Management  
South Carolina Department of Health and Environmental Control

